UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,826	05/10/2001	Deanna Lynn Quigg Brown	AUS920000942US1	5443

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EXAMINER
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ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 March 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.'

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,11-18 and 21-28* is/are rejected.

7)☒ Claim(s) *9,10,19,20,29 and 30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>21 March 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment and Argument

1.   This communication is in response to applicant's 11/23/2004 Amendment in the

application of Brown et al. for a "Method, system, and product for alleviating router congestion"

filed 05/10/2001. The proposed amendments to the claims have been entered and made of

record.   Claims 1, 2, 4, 5, 8-15, 19-30 have been amended. Claims 1-30 are pending in the

application.

The amended paragraphs in specification correct the nonexistent reference characters for

Fig. 4. Therefore, these drawings are now complied under 37 CFR 1.84(p). The objection to the

drawings has been withdrawn due to the corrected or substitute drawings received on

03/21/2005. This drawing is accepted, and has been approved by the examiner.

In view of applicant's amendment to amend the claims to obviate the §112 rejections of

record, therefore, examiner has withdrawn the rejection under 35 U.S.C §112, second paragraph.

2.   Applicant's amendment and argument to the amended claims are insufficient to

distinguish the claimed invention from the cited prior arts or overcome the rejection of said

claims under 35 U.S.C. 103 as discussed below. Applicant's argument with respect to the

pending claims have been fully considered, but they are not persuasive for at least the following

reasons.

3.   Applicant's argument with respect to claim 1 (pages 14-15) that the cited reference does not

show or suggest wherein *"packets are dropped while the router is at a first level of congestion"*

and *"the first level of congestion is less than a second level of congestion in which packets tend*

to be dropped" and "*packets are dropped when the router would not otherwise tend to drop packets*". However, the features upon which applicant relies have no support in the original disclosure. Furthermore, Fig. 4 is best describe for claim 1, and the drawings must show every feature of the invention specified in the claims. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). However, newly added limitation have not shown in the drawings. Therefore, the newly added feature(s) must be canceled from the claim(s). Examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

Claim Rejections – 35 U.S.C. 112, first paragraph

4.   Claims 1, 11, 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitations: "*packets are dropped while the router is at a first level of congestion*" and "*the first level of congestion is less than a second level of congestion in which packets tend to be dropped*" and "*packets are dropped when the router would not otherwise tend to drop packets*" have no support in the disclosure.

Claim Rejections - 35 USC ' 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 3718 of this title before the invention thereof by the applicant for patent.

6.   Claims 1-3, 11-13 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Hadi Salim et al. (US#6,535,482).

        With respect to claims 21-23, Hadi Salim et al. (US#6,535,482) disclose all the subject matter now claimed. Hadi Salim discloses a packet routing apparatus for routing packets , in which a congestion monitor determines a degree of congestion, which is sent back to the source node, using an OSI network layer protocol. This enables the flow of packets from the source to be controlled more accurately to maintain high throughput with reduced probability of congestion (Col. 2, lines 47 plus). Hadi salim further teaches in Fig. 2 some of the principal actions of each of the elements in a network using TCP/IP. If there is severe congestion at router A, the packet may be discarded. If the router detects incipient congestion, an ISQ is sent back to the IP source. The IP source will interpret the ISQ and pass an indication up to the TCP source functions, notifying of the congestion at router A, on the flow to the TCP receiver at host B (See also Figs 5A,B; Col. 6, lines 3 plus and Col. 7, lines 35 plus). Network congestion may be controlled by executing processes to detect the congestion, to notify the congestion state to appropriate nodes in the network, and to adjust the injection of packets into the network in response to these notifications. Forward Explicit Congestion Notification (FECN) is one particular method of explicit congestion notification,

as described in K. K. Ramakrishnan and S. Floyd, "A Proposal to add Explicit Congestion Notification (ECN) to IP," IETF RFC-2481, January, 1999, where congestion detected at a network switch is signaled to the destination nodes of the data packets involved in the congestion. The destination nodes subsequently propagate this information to the respective source nodes. Destination node signaling as well as the subsequent source node signaling can occur in-band using congestion marker bits in the data packets themselves, or can occur out-of-band using congestion control packets dedicated to carrying congestion information.

Regarding claims 1-3, they are method claims corresponding to the apparatus claims 21-22 above. Therefore, claims 1-3 are analyzed and rejected as previously discussed with respect to claims 21-23.

With respect to claims 11-13, these claims differ from claims Hadi Salim in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 21-23. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Hadi Salim for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to processing packets, improving router congestion, and easy to maintenance, upgrade.

Claim Rejections - 35 USC ' 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth

in section 102 of this title, if the differences between the subject matter sought to be patented and the

prior art are such that the subject matter as a whole would have been obvious at the time the invention

was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability

shall not be negatived by the manner in which the invention was made.

8.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent

any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to

point out the inventor and invention dates of each claim that was not commonly owned at the

time a later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 1038 and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9.   Claims 4-8, 14-18 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Hadi Salim et al. (US#6,535,482) as applied to claims 1-3, 11-13 and 21-23 above, in

view of Li et al. (US#6,741,555).

     In so far, as understood with respect to claims 24-28, Hadi Salim et al.(US#6,535,482)

and Li et al. (US#6,741,555) discloses techniques for improving transmission control protocol

performance in network congestion, according to the essential features of the claims. Hadi

Salim discloses the claims limitations as discussed in paragraph 6 above. However, these

claims differ from the claims above in that the claims require the determination of marked

packet from a router. In the same field of the endeavor, Li et al. discloses an Explicit

Congestion Notification (ECN) method to avoid network congestion in a TCP/IP packet-switched network. Such method comprises transmitting, at a source node, data packets to a destination node, via at least an intermediate node; determining, at the intermediate node, if an incipient congestion is encountered, setting a Congestion Experienced (CE) flag in each data packet to notify congestion; sending, at the destination node, an ECN-Echo acknowledgment packet back to the source node to inform congestion; reducing, at the source node, a congestion window and a transmission rate to avoid congestion; if the packet loss is due to congestion, re-transmitting, at the source node, only a lost packet to the destination node; alternatively, if the packet loss is due to transmission error, re-transmitting, the lost packet to the destination node, while increasing a round-trip timeout but maintaining the same congestion window (See Figs 2-5; Col. 4, lines 40 plus and Col. 7, lines 57 plus). It's noted that while artificially dropping packets in order to signal service-level congestion would be counterproductive, an ECN congestion bit can be set to notify the user of the service-level congestion. The ECN bits are set to different values depending upon the level of congestion. For example, if a network is not experiencing any congestion or is lightly utilized, ECN is set to a first value (ECN="01" or "green" value). If the network is experiencing a moderate level of congestion, then ECN is set to a second value (ECN="10" or "yellow" value). If the network is experiencing a heavy congestion condition, then the ECN is set to a third value (ECN="11" or "red" value). Congestion detection processes executed by internal components of a network (such as routers and switches) infer congestion when internal network resources such as link bandwidth or network buffers are overloaded. For example, the DECbit congestion detection process detects congestion at a switch when the average size of the

switch's output queues exceeds a predetermined threshold, as described in K. K.

Ramakrishnan and S. Floyd, "A Proposal to add Explicit Congestion Notification (ECN) to

IP," IETF RFC-2481, January, 1999 ("Ramakrishnan"). As described in S. Floyd and V.

Jacobson, "Random Early Detection Gateways for Congestion Avoidance," IEEE/ACM

Transactions on Networking, Vol. 1, No. 4, pp. 397-413, August 1993, the RED congestion

detection process also uses the average output queue size to infer congestion, but uses two

thresholds. Because congestion detection processes executed by network elements watch for

particular events at individual network components, they are likely to be more precise in their

information than processes executed by end nodes. Moreover, they allow congestion to be

detected earlier, even before it manifests as lost packets or changed latencies at network end

nodes.

Regarding claims 4-8, they are method claims corresponding to the apparatus claims

24-28 above. Therefore, claims 4-8 are analyzed and rejected as previously discussed with

respect to claims 24-28.

With respect to claims 14-18, these claims differ from claims Hadi Salim in that the

claims recited a computer program product for performing the same basis of steps and

apparatus of the prior arts as discussed in the rejection of claims 24-28. It would have been

obvious to a person of ordinary skill in the art to implement a computer program product in

Hadi Salim for performing the steps and apparatus as recited in the claims with the motivation

being to provide the efficient enhancement to processing packets, improving router

congestion, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently

routing and processing of information in packet switching network, and would have applied

Li' novel use of CE flag in each data packet to notify congestion into hadi Salim's teaching of

the processing packets in TCP/IP network. Therefore, It would have been obvious to a person

of ordinary skill in the art at the time of the invention was made to apply Li' enhancement of

explicit congestion notification (ECN) for wireless network applications into Hadi Salim's

congestion notification from router with the motivation being to provide a method and

apparatus for routing and processing packets in TCP/IP network.

Allowable Subject Matter

10.   Claims 9-10, 19-20 and 29-30 would be allowable if rewritten to overcome the

rejection(s) under 35 U.S.C.112, 2nd paragraph, set forth in this office action, and if rewritten

in independent form including all of the limitations of the base claim and any intervening

claims.

The following is an examiner's statement of reasons for the indication of allowable

subject matter: The closest prior art of record fails to disclose or suggest wherein in response

to a determination that the current time is greater than the minimum time, the router for

determining that the second packet was transmitted subsequently to the receipt of the marked

packet; and in response to a determination that the current time is equal to or greater than the

minimum time, the router for detyermining that the second packet was not transmitted

subsequently to the receipt of the marked packet, as specifically recited in the claims.

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

The Gracon et al. (US#2002/0110134) is cited to show the apparatus and methods for

scheduling packets in a broadband data stream.

The Naudus et al. (US#6,130,880) is cited to show the method and apparatus for

adaptive prioritization of multiple information types in highly congested communication

devices.

The Naudus et al. (US#6,535,486) is cited to show the method and apparatus for

adaptive prioritization of multiple information types in highly congested communication

devices.

12.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION THIS ACTION IS MADE FINAL**. See MPEP '

706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR

1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

will the statutory period for reply expire later than SIX MONTHS from the mailing date of this

final action.

13.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to M. Phan whose telephone number is (703)305-1029. The

examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the

organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

14.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for

unpublished applications is available through Private PAIR only. For more information about

the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to

the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-

9197.

Mphan

06/18/2005.

MAN U. PHAN
PRIMARY EXAMINER